# National Seasonal Assessment Workshop

Western States, Alaska and Hawaii

Web Meeting
April 19-21, 2011

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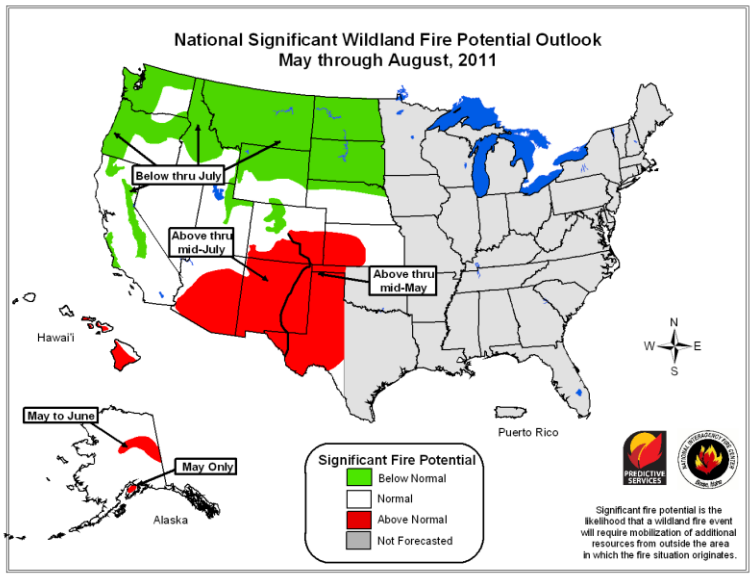
# 2011 National Seasonal Assessment Workshop for the Western States, Alaska and Hawaii

On April 19-21, 2011 fire, weather and climate specialists convened virtually via teleconference and web meeting for the ninth annual National Seasonal Assessment Workshop. A forecast of seasonal significant fire potential for the western states, Alaska and Hawaii was produced. This briefing document includes a description of existing climate forecasts, fuels conditions, and influences on resource requirements.

## Significant Fire Potential Forecast (May – August 2011)

The map below shows the significant fire potential forecast for May through August 2011 across the western half of the U.S., Alaska and Hawaii. Significant fire potential is defined as the likelihood that a wildland fire event will require mobilization of additional resources from outside the Geographic Area in which the fire situation originates. Areas highlighted as "Above Normal" are likely to require additional external resource mobilization.

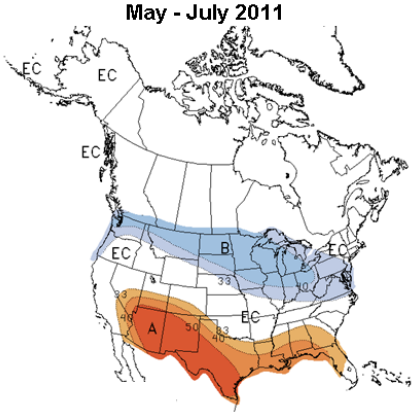



The workshop results indicate there will be above normal significant fire potential across portions of the Southwest, southern Rocky Mountains and leeward side of the Hawaiian Islands. Concurrently, below normal significant fire potential is forecast for portions of the Northwest, Northern Rockies, Rocky Mountains, northern Great Basin and California. Elsewhere, significant fire potential is expected to be normal through August. The critical factors influencing significant fire potential for this outlook period are:

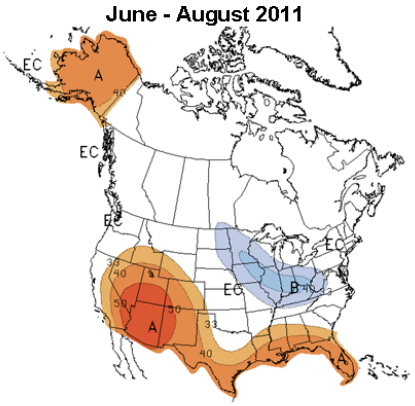
- **Drought:** Drought conditions persist over much of the Southwest, southern Rocky Mountains, southern Great Plains, and much of Texas and Oklahoma. Drought also continues in the southern portions of the gulf coast states, eastern portions of the southern Atlantic states and the leeward side of the Hawaiian Islands.
- **Snowpack:** Snowpack in the Northwest, Northern Rockies, California, the Great Basin, and northern Rocky Mountains has been well above average. In the southern Rockies, Southwest and southern Alaska the snowpack has been below average.
- **Grassland Fuels:** Fine fuels are expected to be abundant across much of the Western U.S., except in areas experiencing extended drought**.** Fine fuels will likely be the major contributor to significant fires across these drought stricken areas through July while above normal snow packs retard fuel drying in the higher terrain.
- **Fire Season Onset:** In areas with above average snowpack, fire season onset will be delayed due to a later snowpack melt.
- **Southwest Monsoon:** Early indications suggest monsoon onset will occur around the typical start date or later with associated precipitation amounts near normal for the season.

**Temperature Forecasts**

**May - July 2011**

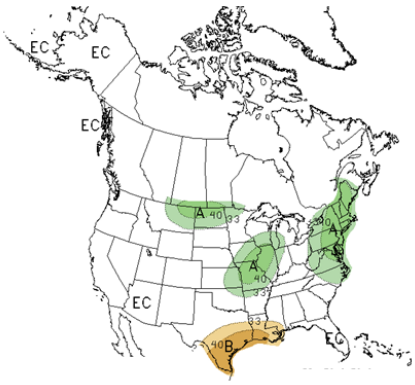


**June - August 2011**

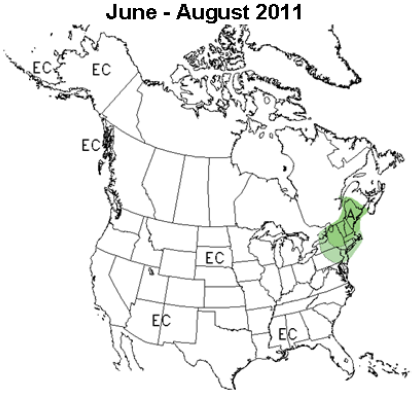


**Precipitation Forecasts**

**May - July 2011**



**June - August 2011**



**A = Above Normal**
**B = Below Normal**
**EC = Equal Chances of Above or Below; or Normal Conditions**

Numbers represent the probability of occurrence

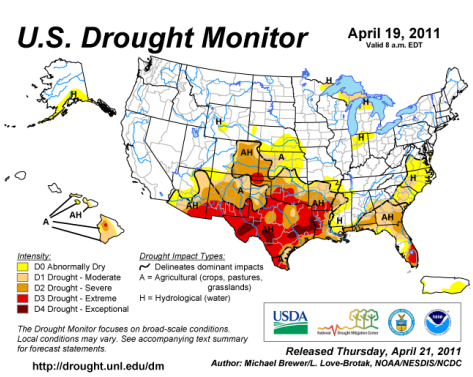
http://www.cpc.ncep.noaa.gov

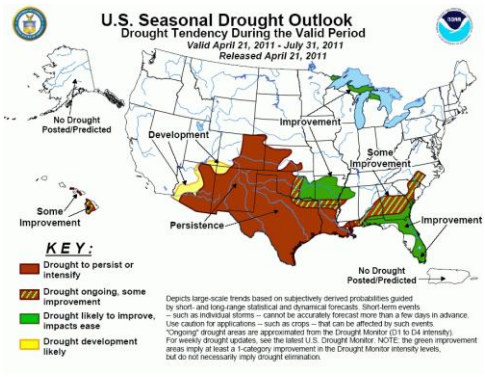
## Climate Conditions and Forecasts

La Niña has been  at its strongest level since the mid-1970s, during this past winter. Historically, La Niña is associated with dry precipitation anomalies in the Southwest and wet precipitation anomalies in parts of the Northwest. Below normal temperatures also typically occur across much of the West, in conjunction with La Niña, while, above normal temperatures though Texas and the Southwest are possible. The October through April patterns of both precipitation and temperature (not shown) mostly reflect the La Niña pattern; much of the West was cool and wet, with many areas well above normal in precipitation, while the southwestern states overall have been warm and dry. The consensus El Niño-Southern Oscillation (ENSO) forecast from the International Research Institute for Climate and Society (IRI) indicates ocean and atmospheric circulation in the Pacific transitioning from La Niña to neutral conditions through summer.

### Temperature and Precipitation

Snowpack, since October 1, 2010, has been normal to above normal across most of the West with the exception of the Southwest, where it has been much below normal. The U.S. Drought Monitor reflects soil moisture deficiencies and drought across most of the Southwest, Texas and the Colorado Plains. The drought outlook suggests persistent drought in the Southwest, through the first part of the summer.




The NOAA Climate Prediction Center (CPC) seasonal outlooks for May through July and June through August 2011 (at left) predict increased chances of above average temperatures across most of the Southwest and below average in the Northwest and northern tier of states. The greatest likelihood of above average temperatures is in Arizona, New Mexico and western Texas during May through July, and across a region spanning from the southeastern portions of Nevada and California, across Arizona and southern Utah, and into far southwestern Colorado and western New Mexico, during June through August. Forecasts for increased likelihood of above average temperatures also cover Alaska.

During May through August, the CPC seasonal outlooks show mostly equal chances of above average, average, or below average precipitation across the West and Alaska. There is a slightly increased likelihood of above average precipitation for eastern Montana and North Dakota (at left). The forecasts transition to a slight chance of below average precipitation for the Pacific Northwest and northern California, during the late summer and early autumn (not shown; for more information, see http://www.cpc.ncep.noaa.gov/products/predictions/90day).

## Geographic Area Discussions

**Alaska:** Significant fire potential in Alaska for the 2011 season is expected to be normal with two exceptions. An area across the Upper Yukon Valley will be above normal for May and June and portions of the Kenai Peninsula will be above normal in May to early June. Snow pack is normal to above normal for most of central and northern Alaska and below normal south of the Alaska Range and in the Kuskokwim Valley. The U.S. Drought Monitor is showing a band of abnormally dry conditions along the Gulf of Alaska from the Aleutians, through South-Central and past Yakutat, except Kodiak Island. Normal temperatures are forecast through May, and then warmer than normal for most of mainland Alaska through the fire season. Precipitation forecasts for Alaska are not favoring above, below, or normal precipitation and the timing and duration of precipitation patterns can easily dominate the fire and fuels situation while staying within the forecast conditions. The Upper Yukon Valley has above normal significant fire potential from May through June due to high Canadian Drought Code values carried over from last fall. Portions of the Southwestern Kenai Peninsula will be above Normal from May through mid June due to spruce bark beetle killed timber stands, and a heavy component of grass understory combined with below normal snowpack. ***Confidence in the outlook for Alaska is moderate.***

**Northwest:** Significant fire potential is anticipated to be well below normal in the Northwest Geographic Area through July of 2011. Afterwards, expect an upward trend toward normal significant fire potential through August. Cool and moist weather is expected to continue for the remainder of spring and early summer. The existing heavy snowpack will melt slowly under these conditions. Drought is not expected in the Northwest Area in spring or summer. Copious rain and snow in March and April boosted snowpack and precipitation totals to well above average, particularly over the higher terrain. Also, there is no tendency for a significant departure from average lightning over the region in La Niña summers. Fuels are anticipated to remain unusually moist through July before reaching normal levels early in August. Climate forecasts suggest summer warming and drying will be slow to arrive. Fire danger indices are expected to rise slowly through early summer, and will likely not reach levels required for significant fire occurence until August. The likelihood of significant fires will rise to near normal for August. ***Confidence in the outlook for the Northwest is high through July and falls to moderate by August***

**California and Hawaii:** Conditions suggest normal significant fire potential, with the exception the central coast and higher terrain which are expected to have below average large fire potential. Fire season for the majority of California is expected to begin in typical time frames. However, elevations at or above 5500-6000 feet had an April 1st snowpack ranging from 125 to 170 percent of normal. The majority of California has seen precipitation ranging from 100 to 150 percent of normal. The Area is expected to see normal temperatures and near normal precipitation through July, trending toward slightly above normal temperatures and slightly below normal precipitation in August. Due to the abundant rain and snow, there is presently no large-scale drought in California. For the higher terrain, significant activity could be delayed until the start of August. Given expected fuels conditions, it is not likely that a lightning event will produce multiple large fires prior to July 1 at low and mid elevations, or prior to August 1 at high elevations. At this time, it is expected to be a near-average type of lightning year. California is emerging from several years of drought. Vegetation remains drought-stressed. In Northern California, heavy snow and winter conditions, combined with insect damage and mortality have resulted in increased damaged, dead and dying vegetation. Green up has already occurred at elevations to about 2000 feet. Curing is beginning to occur in grasses at the lower elevations. There is abundant grass and brush at the lower elevations; at higher elevations (to about 6000 feet), where snow melt has occurred, herbaceous vegetation is also abundant. For Southern California, heavier fuels currently possess a large amount of moisture from the heavy precipitation of the past winter, and snow pack surveys indicate 165 percent of snow water equivalent in the Sierras. It appears unlikely that these fuels will dry enough to become highly receptive during the outlook period. Winter and spring rains have brought an above normal crop of seasonal grasses to the foothills and desert areas and an early emergence of herbaceous annual and perennial fuels.

In Hawaii the islands of Kaua'i and O'ahu will experience normal to above normal fire potential. The remainder of the state will be above normal. Much of the vegetation is drought-stressed. The Energy Release Component at Hawaii Volcanoes National Park has already exceeded the 90th percentile. The fuelbed contains much more dead fuel than typical and measured live fuel moisture is below average. ***Confidence in the outlook for California and Hawaii is moderate to high.***

**Northern Rockies**: Significant fire potential is below normal for the Northern Rockies Geographic Area through the end of July, however, it will return to normal for August and September. The three most important factors affecting fire season are snowpack, drought stress and temperature for the summer months. A strong La Niña has produced well above normal snowpack across the Geographic Area. Additionally, the wet, cool spring is producing even more snow pack, especially west of the Divide. The drought stress has been relieved across the Area by three successive years of above average precipitation. Once again, heading into the fire season, fine fuel loads will be heavy. Warm and dry weather for the western side of the Area is expected for the summer months. North Dakota should see a relatively wet and cool summer. The cool, wet Spring will delay the melting of record or near-record snow packs, especially at higher elevations.

This slow melt, coupled with a cool May, should delay the onset of large fires well into July. The predicted warm and dry weather for June through August should dry and cure all classes of fuels. However, the very moist soils and live fuels will also delay fire activity for several weeks. An abrupt change in weather, transitioning from wet and cool, to dry, then to dry and warm should occur sometime late in May or early June. The expected atmospheric circulation pattern over the Area for July and August, tends to suppress widespread convection, possibly leading to below normal lightning this summer. ***Confidence in the outlook for the Northern Rockies is moderate to high.***

**Great Basin:** The Great Basin is expected to have normal significant fire potential, except in the higher elevations of Idaho and western Wyoming, which will have a delayed start to the season, keeping significant fire potential below normal through at least mid-July. Significant fire potential will increase to normal levels for the balance of the season in these areas, typically through early September. A significantly above normal snowpack for the high country and a cool, wet early spring, with low carryover fuel loadings on the lower elevations, are the most important factors influencing this forecast. Green up is well underway across most elevations below 5000 feet. Annual native grasses are proliferating, while cheat grass is slowly emerging. Heavy early winter snows over the higher elevations largely compacted carryover cured grasses, greatly reducing potential fuel loadings this spring. At lower elevations increased fuel loading and continuity is expected, which typically increases acres burned during the summer. However, fuel loading will have to be determined later in the season, since green up is just beginning. At higher elevations, slowly dissipating snowpack will delay fuel drying; otherwise expect normal timing of fuel curing. In contrast to the last 10 years, no drought conditions as defined by the U.S. Drought Monitor exist in the Great Basin. ***Confidence in the outlook for the Great Basin is moderate to high.***

**Southwest:** Above normal significant fire potential is expected until mid May in the eastern part of the Area and until mid July in the western portions. Above normal significant fire potential conditions stretch across all of New Mexico, the southeastern three quarters of Arizona, and all of west Texas. Normal significant fire potential is forecast for approximately the northwestern quarter of Arizona into a small section of northwestern New Mexico. The eastern third or so of New Mexico and all of west Texas is expected to see a drop in significant fire potential towards normal or perhaps even below normal by mid-May. The persistence and development of severe drought conditions across the majority of the southeastern half of the Area, associated with a generally warm and dry weather pattern over the next few months, combined with increased levels and continuity of finer fuels across most low to mid elevations are driving this forecast. In general, over the past 6 months, high temperatures and meager precipitation have been prevalent across the southeastern two thirds of the Area. Some areas of southern New Mexico and southwest Texas experienced 10 percent or less of normal precipitation. Extreme drought conditions exist from southeastern Arizona eastward across the southern third of New Mexico and across most of southwest Texas. Severe drought conditions encompass much of the remainder of New Mexico, except for the far north, and most of west Texas, except for northern sections of the Texas panhandle area. The only portion of the region with no large-scale drought is the northwestern third of Arizona. Finer fuels are both more abundant and continuous across the majority of the southeastern half of the region, most specifically in low and mid elevations. In addition, due to an extreme cold period this past winter, substantial areas of frost-kill have occurred across sections of southeastern Arizona, southern New Mexico, and southwest Texas. The overall significant fire potential forecast is highly dependent upon improving conditions in west Texas and eastern New Mexico during the month of May and gradually worsening conditions across much of Arizona during both May and June. Moisture return during the month of May is typical for eastern sections of the Area and moisture return into these areas very well could be quick and robust. As eastern sections of the region begin to wane, the central and western sections of the Area will likely become more active, and could see an active period of lightning ignitions across portions of the continental divide region and eventually into eastern Arizona by late May/early June. The period from late May through early July will likely be the peak of the 2011 fire season for the majority of both New Mexico and Arizona. The monsoon or summer thunderstorm season is expected to be robust and roughly on-time, beginning during the first ten days of July. Pinpointing the focus of the summertime rainfall is always difficult, but initial indications suggest a stronger overall focus across the southeast half of the region during the entire July to September time frame. ***Confidence in the outlook for the Southwest is high.***

**Rocky Mountains:** Above normal significant fire potential across the plains of southeast Colorado and southwest Kansas is forecast to decrease to normal by mid to late May, primarily a result of a typical seasonal increase in spring humidity, in addition to increased shower and thunderstorm activity and marginal green up conditions. Above normal significant fire potential is forecast to continue across the southern Front Range, however, generally below 8000 feet. Severe long term drought conditions, and lingering La Niña effects including; precipitation deficits, marginal green up, and frequent windy and dry periods are the primary factors. This area typically experiences an increase in ignitions in May and June. Additionally, significant fire potential is forecast to increase to above normal across the south central and southwest portion of Colorado, generally below 8000 feet. Significant dryness has developed across this area during the last 60 days, in addition to a below average and quickly melting snowpack. Green up is expected to be less prevalent at lower elevations, with carry over fuels from last year's growing season more dominant. Also, climatic increases in relative humidity will be less influential than what is typically seen on the plains. Overall, these trends are forecast to continue into early or mid July, when subtropical moisture associated with the southwest monsoon season, pushes northward into southern Colorado, ultimately decreasing the potential to near seasonal averages. Elsewhere, normal to below normal

significant fire potential is forecast. The fire season is expected to start later than average across northern Wyoming and much of South Dakota, with an expected wet end to spring, cool temperatures and above average snowpack. However, normal significant fire potential is expected in August and September, with some concerns of drier and warmer than average conditions developing. A drier and warmer than average spring is expected to continue across southern Colorado, resulting in below average live and dead fuel moisture. Lower elevation grass or pinion-juniper fuel regimes are the prevalent fuel types vulnerable to fire activity, however, heavier fuels above 7000 feet will also become more available to burn as any remaining snow cover melts off, exposing the finer ladder fuels as the spring progress. ***Confidence in the outlook for the Rocky Mountains is high over southeast Colorado and the southern Front Range and moderate to high in southwest Colorado.***

## Resource Support

National mobilization of resources is expected to be moderate based on the breadth of the projected below normal significant fire potential through July. In May, additional resource support is likely for the Southwest, southern Rocky Mountains and Alaska. The Southwest Area will likely require significant utilization of out-of-area resources through mid-July. In June and July, significant fire potential indicates resource needs to be limited and confined to the Southwest and possibly portions of the southern Rocky Mountains. The demand for resources is likely to increase into August across much of the Western U.S. as significant fire potential returns to normal across most of the region. August will still not likely exceed moderate request levels.

## 2011 National Seasonal Assessment Workshop Summary

The main objective of the Ninth Annual National Seasonal Assessment Workshop is to improve information available to fire management decision makers. Other objectives include:

- Improving communication and cooperation between fire professionals and climate scientists
- Improving interagency and inter-government (state, federal) information flow
- Fostering the exchange of ideas and techniques for assessing fire potential and applying climate forecasts and products to meet fire management needs

These annual assessments are designed to inform decision makers for proactive wildland and prescribed fire management, thus better protecting lives and property, reducing firefighting costs and improving firefighting efficiency.

Workshop participants, in consultation with other specialists unable to attend the workshop, considered a variety of factors when making their assessments. Significant fire potential outlooks are primarily based on interactions between climate factors, fuel types and conditions, long-range predictions for climate and fire and the persistence of disturbance factors, such as drought and insect-induced forest mortality. The main product of the workshop was a map forecasting significant fire potential for the western United States, Alaska and Hawaii.

The 2011 workshop was part of the ninth national assessment organized by the National Predictive Services Group (NSPG), the Climate Assessment for the Southwest (CLIMAS) at the University of Arizona, and the Program for Climate, Ecosystem and Fire Applications (CEFA) at the Desert Research Institute. Workshop funding was provided by the National Predictive Services Subcommittee (NPSS) and the National Oceanic and Atmospheric Administration (NOAA). The sixth North American Seasonal Assessment Workshop, which included participants from Mexico and Canada, was held in conjunction with this workshop. Participating agencies are listed below.

Participating Agencies:

| | |
|---|---|
| Alaska Coordination Center | NOAA Cooperative Institute for Research in Environmental Sciences |
| Bureau of Indian Affairs | NOAA Storm Prediction Center |
| Bureau of Land Management | Northern California Coordination Center |
| California Nevada Applications Program | Northern Rockies Coordination Center |
| California Department of Forestry and Fire Protection | Northwest Coordination Center |
| Canadian Interagency Forest Fire Centre | Oregon Department of Forestry |
| CLIMAS / University of Arizona | Pacific Northwest Climate Decision Support Consortium |
| Department of Agriculture | Pacific Northwest Research Forestry Sciences Laboratory |
| Department of the Interior | Rocky Mountain Coordination Center |
| Desert Research Institute | Servicio Meteorologico Nacional |
| Eastern Great Basin Coordination Center | Southern Area Coordination Center |
| Eastern Area Coordination Center | Southern California Coordination Center |
| National Association of State Foresters | Southwest Coordination Center |
| National Interagency Coordination Center | State of Alaska Forestry |
| National Oceanic and Atmospheric Administration | University of California, Merced |
| National Park Service | University of Idaho |
| Natural Resources Canada | USDA Forest Service |
| NOAA Climate Prediction Center | U.S. Fish and Wildlife Service |
| NOAA National Weather Service | Western Great Basin Coordination Center |
| NOAA Earth Systems Research Laboratory | |

PREDICTIVE SERVICES

NOAA

CLIMAS
Climate Assessment for the Southwest

CLIMATE ECOSYSTEM FIRE APPLICATIONS
Desert Research Institute

NATIONAL INTERAGENCY FIRE CENTER
Boise, Idaho